MASS. G3.2: Sy 68

UMASS/AMHERST

312066 0273 8245 8

A Symposium on Energy Policy in Massachusetts

RECEIVED
AUG 28 1989
DOCUMENTS COLLECTION

Sponsored by

Lieutenant Governor Evelyn F. Murphy
and the
John W. McCormack Institute of Public Affairs
of the University of Massachusetts at Boston

Friday, June 24, 1988

The Federal Reserve Bank of Boston

SAMUEL HUNTINGTON
President and
Chief Executive Officer,
New England Electric System

Samuel Huntington became president and chief executive officer of the New England Electric System in 1984. He joined the Electric System in 1976, serving as assistant general counsel, general counsel, vice president, and chief financial officer.

A Tribute . . .

Samuel Huntington was an unusual man. The president and chief executive officer of New England Electric System, he rose to a position of respect among his colleagues in the industry, not because of his title, but because of his intellectual vigor and integrity.

Within the power industry he was somewhat unique for his willingness to discuss all energy options: conservation and efficiency, as well as nuclear. But it was typical of Sam that he encouraged the purchase of hydroelectric power as a means of avoiding rash decisions to build new and expensive power plants. This openness, practicality, and refusal to become inextricably bound to any one course were his hallmarks.

A man of many interests, Sam served as a trustee or on the board of directors for several organizations. He did not just sit on those boards, but was active, lending his leadership to the Harvard Community Health Plan, the Bank of Boston, Worcester Polytechnic Institute, and the Cambridge Friends School, among others.

Sam Huntington was a leader, a consensus builder, and a man of absolute integrity. It was these qualities which enabled him to achieve a unique position in the vanguard of the electric industry.

Sam was killed by lightning while climbing in Aspen, Colorado on July 29, 1988. Like everyone who knew him, I will miss Sam — miss his vitality, responsiveness, integrity, and the challenge of his intellect. This published record of the Symposium on Energy Policy in Massachusetts is dedicated to Sam Huntington.

— *Evelyn Murphy*

Foreword

We are pleased to publish the proceedings of the Symposium on Energy Policy in Massachusetts and to dedicate this volume to the memory of Samuel Huntington. The presentations and discussion on June 24 need to be read by all informed and thoughtful members of the Massachusetts community. Reliable energy for future economic growth requires managing the overall supply of energy with care. Diversification, conservation, additions to the grid, load management, and environmental quality are matters we all must understand.

The conference was successful because of the expertise and thoughtfulness of each member of the panel. We thank each for participating and for preparing written remarks.

Many people helped to make the symposium successful. We wish to thank Sylvia Byorkman of the Federal Reserve Bank for her gracious and efficient assistance. Our gratitude goes also to Eric DuPont and Ilana Murphy of the lieutenant governor's office for seemingly effortless but constant cooperation and help. Ruth Finn of the McCormack Institute made the computer perform correctly. Jeff Lindenthal designed and edited this volume.

Introductory Remarks

Edmund Beard
Director, John W. McCormack Institute of Public Affairs
Program Moderator

Presentations

Evelyn F. Murphy
Lieutenant Governor of the Commonwealth of Massachusetts

Sharon M. Pollard
Secretary of Energy Resources

Richard W. Kopcke
Vice President and Economist, Federal Reserve Bank of Boston

Panel

Lawrence R. Alexander
House Chair, Energy Committee

Bernice K. McIntyre
Chair, Department of Public Utilities

Samuel Huntington
President and Chief Executive Officer, New England Electric System

Douglas I. Foy
Executive Director, Conservation Law Foundation

George W. Sarney
Senior Vice President and Group Executive, Raytheon Company

Mary Beth Gentleman
Assistant Secretary for Policy, Office of Energy Resources

EDMUND BEARD
Director, John W. McCormack
Institute of Public Affairs
Program Moderator

Edmund Beard is director of the John W. McCormack Institue of Public Affairs at the University of Massachusetts at Boston. A former chairperson of the Political Science Department at UMASS, he holds a Ph.D. from Columbia University. Edmund Beard is author or coauthor of three books and several articles on various aspects of Amercian politics and public policy.

Introductory Remarks

The John W. McCormack Institute of Public Affairs at the University of Massachusetts at Boston is named for the former Speaker of the United States House of Representatives. John McCormack was born in South Boston, less than a mile from the University's campus, and represented Massachusetts' Ninth Congressional District, in which our campus lies, for 43 years—the last nine of which as Speaker. The McCormack Institute is a University-based public policy research center. We have a particular, although not exclusive, interest in issues of concern to Boston, to the Commonwealth of Massachusetts, and to the New England region. We publish the *New England Journal of Public Policy* and we are home to the Master of Science in Public Affairs graduate program.

Given our strong interest in working on public policy issues of importance to this area, we are particularly pleased to join with the lieutenant governor in sponsoring today's event. Adequate, affordable energy is, of course, crucial to the region's well being. Indeed, questions of transportation, housing, development, environmental protection—of the basic economic and social health of this area—depend on solving our energy questions. Given the importance of what we're talking about today, we hope that this will not be a one-shot affair, but rather that today's discussions will lead to an on-going dialogue that will continue until the questions are resolved

and our energy needs are secure.

Let me proceed immediately to introduce the person most responsible for today's meeting taking place, Lieutenant Governor Evelyn Murphy.

In 1966, Evelyn Murphy founded a company known as OSTI (Organization for Social and Technological Innovation). Through OSTI she worked on projects such as the reconstruction of Elmwood Park in Detroit, in alliance with U.A.W. President Walter Reuther and Detroit's minority community. Later, Evelyn Murphy founded Ancon Associates in Boston which specialized in the areas of education, health care, and municipal development. When Ancon merged with Llewelyn-Davies Associates, she became a partner in that international planning and development firm.

Evelyn Murphy was appointed secretary of environmental affairs by Governor Michael S. Dukakis in 1975. During her tenure, Secretary Murphy led the fight to protect Massachusetts' fishing and tourism industries from off-shore oil drilling. She initiated the state's urban Heritage Park program, and won approval for the first federally designated coastal management program for the East Coast.

In recognition of these accomplishments, President Jimmy Carter named her to chair the National Advisory Committee on Oceans and Atmosphere.

When Michael Dukakis came back for a second term as governor, Evelyn Murphy became his secretary of economic affairs. Under her direction, Massachusetts launched the "Centers of Excellence" program to promote emerging technologies such as biotechnology, marine sciences, polymers, and photovoltaics. Her office also developed programs to help low income women, minority and women-owned businesses, and working women achieve economic self sufficiency. In addition, Secretary Murphy, helped mold a partnership with the state's Welfare Department which resulted in "E.T." (Employment and Training Program) for welfare recipients. Recognized as a national model program, her three job training agencies placed over 20,000 women in private businesses.

In 1986 Evelyn Murphy was elected lieutenant governor of the Commonwealth of Massachusetts, taking the oath of office in January 1987. She is the first woman in Massachusetts' 206 year history to serve in a constitutional office. I am very pleased to introduce the lieutenant governor of Massachusetts, Evelyn Murphy.

EVELYN F. MURPHY
Lieutenant Governor
Commonwealth of Massachusetts

Evelyn Murphy announced her candidacy for lieutenant governor in 1986. She won the Democratic primary and the state final election. In January 1987, Evelyn Murphy became the first woman in Massachusetts' history to serve in a constitutional office. Previously, she was appointed secretary of economic affairs by Governor Michael S. Dukakis in 1983, and was appointed secretary of environmental affairs in 1975. President Jimmy Carter later named her to chair the National Advisory Committee on Oceans and Atmosphere. Ms. Murphy earned an A.B. from Duke University, a master's degree in economics from Columbia, and a doctorate in economics from Duke University.

The turnout at this symposium is representative, as Ed Beard has said, of something quite unusual, special, and crucial to this state. I thank Ed Beard, Ray Torto, and Murray Frank for what they have done to bring all of this together. This kind of planning and work, to produce this diverse involvement, is extremely important and the McCormack Institute has been as wise at doing this as any group that I have seen.

I will be fairly brief. This panel has enormous expertise and a broad range of interests. What I want to say to you is simply this: it would be easy for us to fight, bicker, and to be divided on how we approach the energy issue. And if we do that, we will find ourselves in some very serious troubles. It is much tougher for us all to see that we are in this together, that we absolutely have to work together right now to provide adequate energy resources to get through the 1990s and into the next century. We have to devise ways that keep our economy going and growing, and take full advantage of the opportunities that are in front of us. It is a much tougher course, but if we do not do it, we are foolish. And if we do not do it, we pass up the economic momentum and the result may be that we have a hard time living with our conscience in the next century.

I ask you to rest, to put aside past differences and disputes. Let us look at what it is going to take right now and let us think about what brings us together. It is clear from the Federal Reserve study—from many of the other studies that have been done—and from the recent Boston Chamber of Commerce study, that there is a lot of concern about whether we have an adequate supply of energy. There is much debate. Debate that is increasingly focusing on the fact, and I take the Federal Reserve studies projection, that we need at least 2000 megawatts (MW) between now and the end of the century: by the mid-nineties, as a benchmark. I take this as a statement that in fact we have got to add, at the margin, to the grid. At the other end of the spectrum, I refer to the work that Doug Foy has done around energy efficiency, to shed some of the demand for load.

We can quarrel about the intensity of shedding load through efficiency and the intensity of what we need if we use various ratios for growth and to sustain growth through energy supplies. Instead, I ask you to look hard at where we are today. I think that there is increasing agreement that we have got to add marginally to the grid and we have got to shed some of the load, again, at the margin. If we start there, we will get ourselves off the dime. We can find ourselves beginning to move.

A lot of the debate, whether it's about numbers and growth, and potential for savings, or about nuclear power, has allowed these arguments to displace the real issue—economic growth in New England that has been ratcheting up demand. For those of us in the state government who watch that peak wave phenomenon, and many utilities in the power pool, it is unsettling when we hit these very hot or very cold days. We see then that we must manage the overall supply of energy with care, and understand that we must now use care to insure reliability over the long-term and in the short-term. I think there is also agreement that in the near future we need to diversify energy sources and be less dependent on oil, coal, and nuclear power, and use the opportunities for natural gas that will be available in the near future.

I propose casting suggestions to accomplish this in several ways. In terms of adding marginally to the grid, we must look at the small scale plants and proposals that are in the licensing process right now. I am amazed with what is there. It requires the state to develop a more efficient and timely licensing process to keep the license applications for additional energy producers moving. I think it also means that we look at natural gas and the

potential in the early 1990s for expanding there. In terms of shedding load, it is important to look at energy efficiency measures. But in the short-term, I suggest to you that all the interruptible service contracts are very valuable, especially when we hit that OP4 process, when load is shed quickly.

Last week, we shed 150 MW through interruptible service contracts when we hit another peak in Eastern Massachusetts. That is more than we have done before but it is still such a small amount, about 1.5 percent of what is on the grid right now. In fact, we can do a lot more before governors and acting governors will have to go on television and ask for voluntary cutbacks. When we hit that step—appeals by public officials—as all of you know, we are fast going through all the options remaining in OP4.

It seems to me that the business community plays a very important part right now in helping us come together in both the short-term and medium-range responses to adding and shedding. The business community is the glue for holding together a coalition to tackle this issue. I hope that we can get clear steps, and clear agreement out of this conference. Perhaps, if Ed, Ray, and Murray put this together again next year, we will see how well we have followed up on our discussions.

We have to cast these actions and to say, *We are going to work on them together—the business community, the utility companies, state government, energy efficiency activists—all together.* I did this in the mid-seventies around the Environmental Impact Report statement. I am absolutely sure it can be done again. In this manner, a policy can be produced which is not only effective in protecting our environmental quality, but will also insure business activity that can thrive with environmental protection and a long-term efficient supply of energy.

As I have said, it is not easy to do. But if we can build that tone of collaboration and if we can determine some short-term actions that get us moving on marginal changes in this grid, then I think we will set the tone in the next couple of years for determining how we provide reliable energy through the 1990s and into the year 2000.

One final point. When we leave, I ask all of you to write down your comments and how you would suggest we continue to knit these interests together, and forward them to the conveners of this conference. We need to establish an interactive dialogue. I do not want us to walk away saying that this was a nice friendly chitchat, thoughtful and sometimes provocative. Allow us to distill your suggestions and develop an action plan that together

we follow through on. Let us establish an ongoing commitment to moving on this and hold ourselves accountable a year from now to see whether we have gotten some actions done—measurable actions—measurable actions of adding and shedding to the grid.

And on that note, let's get going. In the large number of people in attendance, I think we can see that the involvement of the business community can be a very important addition. Those of us who have worried over energy issues for many years realize we need to keep expanding our base of involvement and support to educate the public, and to educate ourselves about what the stakes are for our economic prosperity in the future.

SHARON M. POLLARD
Secretary of the Executive Office
of Energy Resources

Sharon M. Pollard was appointed to the position of secretary of the Executive Office of Energy Resources in 1983 by Governor Michael S. Dukakis. This appointment came shortly after she was elected to her fourth term in the Massachusetts state Senate. In 1976, Ms. Pollard became the youngest woman ever elected to the state Senate. She was a founding member and first Senate chairperson of the Energy Development Caucus, a bipartisan coalition of legislators who advocated energy conservation and the development of renewable energy resources. Ms. Pollard earned her bachelor's degree at Dunbarton College and in 1984 was awarded an honorary doctorate from North Adams College.

There certainly has been a great deal of debate about New England's electricity situation over the last two years and much of it has been very valuable and is appreciated by those of us who work in the state on these issues. However, I believe the time has come for the debate on what the situation is to end and for more aggressive action on this situation, to begin. First, I would like to review where the discussion on New England's electricity situation stands today and to highlight what I think we have learned from it.

The debate of the last two years has focused on whether or not there is an electricity supply situation and how big it is. Several groups involved with electricity issues or concerned about them have conducted their own analyses and have issued their own reports on the situation. Interpreting the results of these reports can be very confusing. The New England Governors' Report, released in December of 1986, was the first of these reports. Entitled *A Plan for Meeting New England's Electricity Needs*, it was prepared by the New England Governors' Power Planning Committee with assistance from the New England Power Pool (NEPOOL). This report analyzed the implications for New England's electricity supply under base

and contingency case scenarios. The report concluded that electricity supplies looked tight for the next few years, but that if actions were taken immediately by the region's utilities and to a lesser degree, the states, electricity supplies could be adequate to meet our short-term needs. It further concluded that there was time to plan for our additional long-term needs.

A second report, the Federal Reserve Bank Report, was released in late 1987. Conducted in response to concerns raised by the business community, it concluded that new electricity supplies would not be needed until the mid-1990s. However, it also expressed doubt about some of the utilities' predictions and their projections—especially for the near term—for demand, conservation, cogeneration, and for small and independent power production. It concluded that there were factors in the utility industry environment that made it highly uncertain whether the utilities would achieve their goals and whether supplies would be adequate.

More recently, we can look at NEPOOL's April of 1988 CELT report and short-term outlook for this summer, next winter, and the summer of 1989. While not a planning document according to NEPOOL, the CELT Report does provide us with information about how the region's utilities see our electricity situation. In conjunction with NEPOOL's short-term outlook, we see a picture that is consistent with reports that I have already mentioned. NEPOOL projects tight electricity supplies in the short-term—this year and next—easing somewhat until the early 1990s, about 1993, when the utilities will need to add some long-term supplies.

These reports discuss New England's situation and, as you may expect, Massachusetts' situation is similar. In-house projections by the Executive Office of Energy Resources show us in a tight capacity situation through 1989. The situation then eases as resources from projects now under construction or programs now being implemented become available. Again, by the early 1990s, Massachusetts will need to begin to plan for additional supplies to meet needs through the late 1990s. All of these reports move on from their analyses to, in some cases, different conclusions which assign responsibility for causing and solving the problems that they have identified.

However, I want to focus for a moment on where these analyses agree and I think that the area of agreement is significant. While there has been much debate about the conclusions of these analyses and reports, it is

significant to note that with regard to the "facts" of the electricity situation today, they are all in agreement on two points. First, that today's electricity supplies are tight and look to remain tight for the next year or so. This situation has arisen, in large part, because the utilities have relied on resources including Seabrook and Pilgrim to be available—which are not for a variety of reasons—including important public safety concerns. Utility projections for this tightness to ease rely on the availability of these two plants. Other projections rely on the timely development of other resources now being planned for or under construction. Secondly, in the long-term, these analyses agree that New England will need to develop new electricity supplies by the early to mid-1990s to serve long-term customer needs and to sustain economic growth.

Planning for these supplies should be taking place now. It is important to separate this "numbers" issue from the underlying and more important question about plans and action, and to recognize that they are essentially in agreement on the "facts" just mentioned. Without recognizing this separation, we end up endlessly debating the wrong question. That is, "Is there a problem with electricity supplies?" Rather than moving on to the really important question, "What should we be doing to avoid problems and to ensure that our future supplies are adequate?"

This is not to say that the "numbers" question is not important. It is very important and that is why there has been so much debate and so much written about it. However, if the "numbers" question is not put aside, it will continue to cloud the discussion on policy. I have long advocated that it is time to bring this phase of the debate to a close and to move forward to the larger and more important question, one that I think that many of you here have really been trying to ask: What policies or plans are being implemented or should be implemented to ensure that Massachusetts' and New England's energy supplies are adequate to meet our present and future needs and to sustain our economic growth?

In the analyses mentioned earlier, several possible actions have been referred to as "plans" to meet our present and future needs. Two have been to license Seabrook and to return the Pilgrim nuclear power plant to service right away. But these are really not plans! The future of these plants is uncertain at best. They are not in operation now because of important public safety questions and concerns. The courts and the federal regulatory agencies are going to ultimately decide the fate of these power plants. We must

move beyond debating their future. Planning for adequate future electricity supplies must take place now and I am not sure whether or not that is taking place.

The Executive Office of Energy Resources views proper planning, to ensure adequate electricity supplies to meet present and future needs, as a two-part process. The first part contains two steps: first, to define the key contingencies that must be addressed in our plan; and secondly, to identify the resource options to be considered in the plan. Once these contingencies and options have been identified, one can know what there is to work with in shaping a plan.

I have already mentioned some obvious contingencies or uncertainties that must be addressed in any supply policy or plan for Massachusetts and New England. But there are also additional contingencies and they include: the rate and type of economic growth; fuel price trends; changes in environmental regulations; the rate of conservation and load management implementation; the rate of cogeneration and small independent power development; and short-term operational factors, such as the maintenance schedule. An adequate resource plan must address the implications of deviations from the expected in all of the above factors. It must contain a course of action to be followed to ensure adequate supplies even when circumstances turn out differently than we expect.

The second step in the first part of the planning process is to identify all of the resource options available and to estimate the amount of power each can be expected to provide. These options include, on the utility side: implementation of conservation and load management programs; power purchases from small and independent power producers, cogenerators or other utility systems; improving power plant maintenance; upgrading or building new transmission facilities; repowering existing power plants, and where appropriate, building new generating capacity. On the governmental side, they include items such as implementation and enforcement of the new appliance efficiency standards, and energy efficiency building codes. And on the business side, they include taking advantage of more energy efficient equipment and processes when the time comes to expand or replace the existing equipment. To date the utilities have been focusing on this part of the planning process.

But defining contingencies and identifying options isn't enough! Alone they do not constitute a plan to ensure that our supplies are adequate. The

second part of the planning process is critical. The utilities' task here is to lay out and implement a supply plan within the policy framework laid out by the energy policy and regulatory makers. The utilities are responsible for implementing plans that will ensure that resources are adequate to serve customer needs. Government's role is to set forth the policy and regulatory framework within which the utilities can plan for resource additions.

Over the last two years, the Executive Office of Energy Resources has taken action to refine Massachusetts' policy framework to promote the timely and efficient development of a wide range of energy resources. The Energy Facilities Siting Council has continued to enforce its policy on utility supply planning through a series of rulings on utility forecasts and supply plans demanding that utilities emphasize a balance between having reliable supplies at least-cost with minimal environmental impacts. Several years ago, the Energy Office petitioned the Department of Public Utilities to establish new rules and processes to facilitate the development of small power and cogeneration. These rules have been in place for nearly two years, thanks to the DPU. The state's initial experience with them has proven that there is a tremendous amount of energy available in Massachusetts—ready to be developed.

State government is also planning cogeneration facilities for its own institutions. A study by the Executive Office of Energy Resources estimated that there is potential for up to 245 megawatts (MW) of cogeneration available at schools, hospitals, and correctional facilities. The Executive Office of Energy Resources has also filed a proposal with the Department of Public Utilities for establishing a least-cost planning process to incorporate conservation issues and broader resource planning into utility actions. The agency has also been taking actions appropriate to state government that would help us to meet our energy needs through demand side programs.

As of January 1, of this year, there is a new state appliance efficiency law in place that was originally sponsored by the Energy Office, the chairs of the Energy Committee, and others. This particular law sets energy performance standards for household appliances which are sold in Massachusetts. As of July 1, 1988, the Commonwealth will have a new energy conservation section in its state building code. This will help cut energy use in new buildings by 10 to 25 percent. Very significant. In addition, the Energy Office runs a program which helps commercial and industrial establishments cut their energy use by 10 - 15 percent. The agency has also

established a zero interest loan program, which to date has helped over 10,000 middle income families in Massachusetts reduce energy use in their homes. This program has resulted in over $50 million of investment in the state's economy.

We have worked hard and although we have worked closely with the utilities, with businesses in Massachusetts, and with consumer groups in the development of our energy policies and programs, we also know that further refinement should and will continue to take place. Additional input from groups, such as those I have mentioned, will certainly be solicited. Policy development and planning is a dynamic process that must and will continue to respond to changing circumstances. I conclude with a few comments on the Executive Office of Energy Resources' view of supply policy and utility supply plans. I restate some policy positions we have long held on the government side and believe that the ball is now in the utilities' court.

All types of resources must be pursued in developing and implementing a supply plan. We see conservation and load management as the cornerstone of any plan for resource additions, but recognize that plans will include small and independent power and cogeneration, and may include, where appropriate, least-cost planning, goals, and new utility generation. Our policy is that the utilities should seek diversity and insurance against risk in developing their supply plans. If utilities believe that new utility generation or repowering offers this insurance at the least-cost to consumers, then they should make proposals to that effect. The Energy Facilities Siting Council has licensed every major power facility that has come before it in the last 10 years. Most recently, a 300 MW gas-fired power plant to be located in Bellingham, Massachusetts was approved in December of 1987.

My office and state government as a whole is committed to working with utilities to ensure that electricity supplies in Massachusetts will be adequate. The utilities must also do their part and the process must include those who will be most affected by utility and government decisions: the business community and the consumers in Massachusetts. Each of us has had a role to play and it is time to move forward aggressively with the implementation of our policies and our programs.

RICHARD W. KOPCKE
Vice President and Economist
Federal Reserve Bank of Boston

Richard W. Kopcke is a vice president and economist in the Research Department of the Federal Reserve Bank of Boston. Before joining the Bank in 1974, Mr. Kopcke was a lecturer at LaTrobe University, Melbourne, Australia. Mr. Kopcke completed his bachelor's degree at the Universtiy of Michigan and received a Ph.D. from Harvard University in 1973. He has also taught macro-economics and finance at Harvard, Brown, and Boston University School of Management since joining the Federal Reserve.

Today you will hear from many experts who have devoted many years of study to the issues of energy: the engineering issues, the political issues, the economic issues. Unfortunately, I am not one of them. I guess you could say my expertise is ignorance combined with a healthy dose of naiveté. I was introduced to this subject about a year ago when I, and three of my colleagues, were invited to write a report, answering the question: "Is Massachusetts running out of electricity?" I did not consider it a daunting task at the time. Economists are used to comparing one number with another, seeing which is bigger, and then responding: "Yes, we are running out of electricity; or no, we are not."

But very quickly we found out that this issue is far more complicated than we bargained for. Being newcomers, there is still much we do not understand about energy; but having studied the issues and having heard from many experts, we have tentatively come to some conclusions.

Our first conclusion is that the region is underinsured. We lack adequate contingency planning for providing for our future supply of electricity. In other words, there is a large inherent error in forecasting the supply and demand for electricity, which has nothing to do with uninformed ignorance or incompetence. Looking at the plausible forecasts of the demand for and supply of electricity, we found that in an uncomfortable number of cases, we could be straining our resources for supplying electricity during the next decade.

We cannot conclude that we are running out of electricity for sure. But even if the demand for electricity does not strain our supply between now and the year two thousand, that does not mean we have no problem. The conditions that have led to our state of underinsurance may still prevail.

The region is underinsured because the investment incentives for risk taking are not very great. There are few rewards and often penalties for having undertaken investment in anticipation of a potentially great need for electricity. To a great degree, this is understandable because our region, like many regions in the 1970s, had too much capacity. We were arguing over who was going to pay for the redundant capacity. We are in no hurry to repeat that experiment. So the incentives for utilities' building in anticipation of very rapid growth in the demand for electricity, realizing this growth might not occur, are not great. Through licensing or permitting processes, through prudent standards, through used and useful requirements, and through outright penalties, federal and state regulators discourage the utilities from undertaking risky investments.

Utilities are monopsonous and monopolous by law in New England, which means that utilities alone can sell electricity and that independent power producers can sell their electricity only to utilities. When a utility is not encouraged to take risks, other investors are not encouraged to bear risks, because utilities surely are not rewarded for absorbing the risks for independent power producers. Contracts that utilities offer other power producers will not encourage adequate investment unless utilities themselves are encouraged to take risks. It is not as though the utilities are letting down their end of the social bargain. They seem to be planning for enough capacity to meet our prospective average needs. Unfortunately, if demand is above these average needs, our supply of power may be inadequate.

Our examination of power planning also suggests that we run the risk of being guided too much by too narrow a concept of least-cost planning for building new electric generating capacity in New England. Least-cost planning sounds good, it sounds simple, but it is really difficult to apply. In the past, perhaps too much attention was devoted to least-cost planning in one dimension only. An inordinate amount of attention is paid to determining whether a new plant would produce electricity at 4 cents a kilowatt hour or 5 cents a kilowatt hour. We cannot forecast supply and demand, or relative fuel prices very accurately two decades or four decades into the future. We often cannot know whether one plant is really cheaper than another plant for the next twenty or forty years. Under these circumstances,

true least-cost planning entails diversification, relying on a variety of technologies, fuels and strategies to meet our energy needs. In this fashion we can reduce the risk of paying too much for our energy in the future.

Cost is just one dimension of least-cost planning. True least-cost planning achieves relatively economical power, produced and consumed in a fashion that is safe, clean, and attractive. If the "cheapest" power plant were too unsafe, produced too much waste, or required flooding too much valuable land, it would not be "least-cost." If the "most efficient" plant or office designs harmed productivity or morale, they would not be "least cost." Least-cost planning has many different dimensions. For this reason, we should be glad we have energy offices in our state governments and we ought to encourage more broad-based energy planning ranging from power plant construction to building codes, from environmental protection to product licenses.

In a sense, New England has become too accustomed to paying relatively little for reliable electric power. Our electricity has been relatively cheap because our major power plants were built mostly a decade or more ago, so the capital costs embedded in our electric rates are very low. Our energy has been reliable because we have been used to surplus capacity until recently. In the future, electricity is going to become relatively more expensive. In the short run, if we do have a supply problem, there is no question that we will cope most readily by relying on small power plants, cogeneration, conservation and load management, and more efficiency in consumption. By relying on these remedies, especially the latter options, electric rates would not increase very much, but consumers would have to pay the added costs of capital investments in new technologies.

I bought a perfectly good refrigerator just a few years ago. If I replace it with a new $500 refrigerator, the amount that I will save in lower electric bills by installing a new refrigerator is worth at least $500. Although I know this, I still have not replaced my refrigerator, because the return I earn on alternative investments is greater than that on the new refrigerator. The new refrigerator truly is too expensive. If I buy the new refrigerator, the expense might not show up on my electric bill, but I will still have to pay the price. Energy is going to become more expensive in the future whether we build new power plants or invest in technologies to consume power more effectively. We can, however, shape how it becomes more expensive.

We can reduce the price of electricity at the meter through education and through better product licensing and building codes, but eventually the

price at the meter may have to rise. We should not encourage homeowners and manufacturers to think that they are not in the energy business if they are discharging considerable thermal energy or otherwise needlessly wasting power. The price of energy ought to be high enough so consumers regard energy as a valuable resource that could be used and managed as profitably as any other resource.

In the long run, we think well-designed policies can achieve a better balance between the potential demand for and potential supply of electricity. We are learning from past experiences that prevailed under different technologies, different energy prices, and different rates of economic growth. We are trying to cope, and we seem to be doing a pretty good job. But in the future, I would expect to see electricity prices reflecting more closely the cost of installing new capacity (current value pricing or marginal cost pricing). I would expect to see more competition in the power industry as investors earn returns comparable to the risks they bear. This may apply to utilities and it will definitely apply to independent power producers, cogenerators, and those investing in efficiency and conservation techniques.

I expect to see more coordination among our regulators. In New England, the state regulators have done a good job among themselves. But, federal energy policy is just as important as state energy policy. Many of our generating stations are regulated by federal authorities rather than by the states. There are many different regulators involved in the electric power industry, including the EPA and administrative law judges. Better coordination would yield cheaper electricity. And I also expect in the future that we will have better linkages with other grids throughout North America that enable us to share our risks better among the grids.

Public policy making needs your guidance. This is the theme you will hear repeatedly. Public officials, like investors in the power industry, face potentially big risks. In order to diffuse these risks and allocate them best in our energy planning, we need to know what your needs are, what insurance premium you are willing to pay for adequate electricity, and just how you are willing to pay that premium, whether you want to undertake the investments yourself or whether you want to pay utilities or other power producers. In any case, public officials and power producers would like to establish new regulations and electricity pricing rules to convince consumers to manage their energy needs more wisely. To accomplish this task most effectively and least painfully, the advice of residential and business consumers is needed.

LAWRENCE R. ALEXANDER
House Chair, Energy Committee

Representative Larry Alexander (D-Marblehead/Swampscott) is now serving in his tenth year as a member of the Massachusetts House of Representatives, where he is House chairman of the Energy Committee. Mr. Alexander authored a law that greatly reduces energy consumption by requiring that certain appliances sold in Massachusetts meet minimum efficiency standards. Prior to serving in the legislature, he was chairman of the Marblehead Planning Board and is a former trial lawyer. Mr. Alexander is a graduate of Yale University and received his law degree from Boston University School of Law.

I commend the lieutenant governor and the John W. McCormack Institute of Public Affairs for cosponsoring this symposium. I also congratulate the lieutenant governor for her Blueprint 2000 initiative. It is a positive development for representatives of the business community, the utility industry, and the public sector to sit down together to discuss New England's energy future.

All of us recognize the need to take strong action to make sure that our region's bullish economy continues to have sufficient energy supplies to fuel its rapid growth. What concerns me, however, is that few people seem to recognize the potential for energy efficiency and small power production to help us reach this goal. So many people are so quick to press the Seabrook or Pilgrim buttons that they lose sight of the potential that energy efficiency and small power production programs can offer Massachusetts.

I was astounded to find that only 9 percent of the respondents in a recent Chamber of Commerce survey felt that there was a great deal more that they could do to reduce energy usage in their businesses. This response so underestimates conservation's potential—and reflects such a lack of communication about what some businesses in the community are accomplishing—that I feel it important to focus my remarks in this area.

I begin by dispelling a few myths that some people may still harbor:

Myth 1: *Conservation means sacrifice.* Energy efficiency does not mean freezing in the dark—it means wasting less energy when accomplishing the same task. Changing to energy-efficient lighting, buying a new refrigerator or installing windows with a high R factor do not require any lifestyle changes, but each action can save substantial electricity. Consumers can buy energy-efficient refrigerators and still have ice cube makers on the door. Rapid technological improvements have dramatically reduced the energy consumption of lighting, heating, cooling, and industrial systems without any loss in quality of the product.

When we asked people to conserve in the 1970s, we asked them to wear sweaters and turn down their thermostats. Times have changed, however, and I hope none of you remains stuck in a time warp from the past. When we ask for conservation in the 1980s, we no longer ask people to sacrifice. We are talking about "invisible" energy efficiency measures that people hardly notice. Technological advances have made it possible to save enormous amounts of energy without any change in lifestyle.

Myth 2: *Conservation means a stagnant economy.* Many people still believe that conservation is antithetical to rapid economic growth. Nothing could be farther from the truth. In fact, despite using less energy in 1984 than in 1973, the United States economy still grew by over 30 percent! It takes less energy to produce a single unit of GNP today than it did before. The success of the West European, Scandinavian, and Japanese economies is due in part to their more efficient use of energy. The Japanese, for example, use 55 percent less energy to produce a unit of GNP today than we do.

Conservation is labor-intensive; it produces more jobs over a longer period of time than any other energy option. These jobs are created locally, thus boosting our state economy instead of the trade deficit. Energy efficiency is, therefore, an important component of economic health—not a stifler of economic growth.

Myth 3: *We've already done all the conservation there is to do.* To the contrary, conservation offers incredible potential for meeting our energy needs. Unfortunately, the Chamber survey shows that there are many who believe that we have just about "maxed out" in our ability to use conservation. That just is not the case at all. I was pleased to see that the Federal Reserve Bank's report notes that most experts agree that a "good deal" of potential savings remain in conservation. Here are but a few analysts'

conclusions:

- A recent report by a Boston Edison consultant stated that by the year 2000, in just the Company's service territory alone, energy efficiency programs could reduce Boston Edison's demand by 1000 megawatts (MW)—an amount equivalent to three times the average annual power generated by Pilgrim.
- The New England Energy Policy Council analysis concluded that with an active energy efficiency program, New England could save 10,000 MW and use less electricity in 20 years than it uses today, while still meeting the economic growth rates projected by the region's utilities. Even if we achieve one half of our region's potential, the need to build new, more expensive, large generating capacity could be greatly deferred.
- An analysis by Dr. Art Rosenfeld of the Lawrence Berkeley Laboratories suggests that constructing new commercial buildings in an energy efficient manner could save 85,000 MW nationwide.

Myth 4: *Conservation costs too much money.* In fact, conservation almost always saves money.

Saving energy through efficiency improvements is almost always less expensive than building and operating a new generating plant. The cost of saving electricity through the use of efficient lighting, efficient heating and cooling, and sensible building design and construction is between zero and $.05 per kilowatt hour. The cost of generating a kilowatt hour of electricity, however, ranges from $.03 - $.06 for a cogenerator, to over $.065 per kilowatt hour for a small-scale combustion turbine, to over $.20 for a large, new nuclear plant.

Energy efficiency is also a good deal because it is very reliable. Unlike generating plants, energy conservation measures do not break down or go out of commission for long periods of time. Energy efficiency improvements promote economic growth by allowing businesses to spend more on productive investments instead of on utility bills. They can be installed quickly and instead of requiring long-term financing, they begin saving businesses money soon after installation. In contrast to new generating plants—all of which involve varying degrees of risk to the environment—energy efficiency measures are generally benign and have little or no impact

on the environment.

Myth 5: People give lip service to conservation, but there are few examples of its actually having much of an impact. To the contrary, energy efficiency measures are in fact producing some rather startling savings:

- The Massachusetts Appliance Efficiency Law, which I, Secretary Pollard, and a coalition of utilities and environmental groups joined in pushing, will ultimately save Massachusetts consumers as much energy each year as Seabrook would offer them—simply by requiring all new refrigerators, freezers, hot water heaters, showerheads, and fluorescent ballasts sold in Massachusetts to meet minimum efficiency standards.
- The National Appliance Efficiency Law, which covers even more products, will ultimately save as much electricity as the output of 28 new nuclear power plants.
- A new commercial and industrial lighting efficiency law—now on the Governor's desk—which was initiated by Sylvania, will ultimately save hundreds of megawatts of electricity.
- Pacific Gas & Electric Company has already invested $1 billion in energy efficiency programs which will save approximately 2000 MW of electricity—almost two times the capacity of Seabrook. Without that investment, PG&E estimates that it would have spent between $5 - $7 billion building new power plants.
- Boston Edison's Design Plus Program for its largest commercial customers is aimed at reducing participating customers' energy consumption and on-peak demand by 20 percent.
- Gillette's South Boston plant uses half the energy it previously used to make razor blades by installing new equipment which paid for itself in less than 5 years.
- Installation of new energy-efficient ballasts in this building will help the Federal Reserve Bank reduce its annual energy costs by more than $55,000 per year.

Conservation, therefore, already has a proven track record of success, can help boost our economy, involves little sacrifice, costs less than all other energy options, does the least damage to the environment, and still has enormous potential.

With that in mind, I issue all of you a challenge. I challenge you to take

the same fervor with which many of you have embraced Seabrook or Pilgrim and use this fervor to promote energy efficiency, both in your individual businesses as well as in the promotion of public policy.

I will focus on one piece of legislation in particular that I hope you will rally around.

With electricity supplies somewhat tight these days, it obviously makes no sense to use electricity in situations where less expensive fuel sources are available. Yet that is exactly what we are doing these days when new housing units use electric resistance as their heating source. To those of you who are skeptical that in this day and age people would still put in electric resistance heat, I note that a recent analysis found that 53 percent of all new or converted residential units in Boston Edison's service territory used electric resistance heating or heat pumps reliant upon electric resistance heating.

If Massachusetts is concerned about whether or not there will be enough electricity to keep computer operations, manufacturing plants, and other businesses operating, would it not make sense to discourage the use of electricity in homes that could use some other, less expensive form of heat?

That is the purpose of legislation I have filed that would charge a "hook-up fee" to developers of new or substantially renovated homes that use electric resistance heat. By discouraging electric resistance heat, the bill would save homeowners hundreds of dollars each year in heating bills as well as save society a considerable amount of electricity.

The bill, H. 5308, would also establish an incentive/surcharge formula for all new buildings projected to consume 350 kilowatts or more of electricity. Efficiently designed buildings would receive a financial bonus from their electric utility. "Energy guzzlers" would have to pay utilities a fee to help reflect the added costs of providing electricity to them.

Copley Place right now consumes more electricity than the entire city of Chelsea! Had this legislation been in effect at the time Copley Place was built, this project would very likely have been better designed and be using much less electricity than it does today. Efficiently designed buildings are achieving electricity savings of 30 to 50 percent.

H. 5308 would save ratepayers money because this bill would reduce the need for utilities to build expensive new electric generating plants. Utilities would also benefit because they would not have to bear the risks and potential costs associated with building new electric generating plants.

H. 5308 has already passed the House, it still needs Senate approval, and I urge you to contact your senator in support of this legislation which will help ensure adequate electricity supplies in the future. There are other important legislative initiatives we should rally around. A voluntary home energy rating system that I have proposed would encourage residential conservation. Under this program, homeowners who make their homes energy-efficient could obtain official recognition that they could proudly advertise when selling their homes.

In addition, we could encourage an across-the-board regulatory policy in which we level the playing field so that utilities earn a profit on energy efficiency investments that is comparable to the rate-of-return earned on investments in new power plants. The current practice which allows utilities to recover energy conservation expenses only tends to discourage substantial investment in energy efficiency.

Energy efficiency measures hold enormous potential for helping us meet our future energy needs. Whether initiated voluntarily, through utility programs, or by regulation or legislation, energy efficiency measures will help us ensure a reliable supply of electricity in the future. Yet we will need additional sources of generating capacity, and I will touch on this briefly.

After conservation, our next best option for obtaining reliable, affordable, and clean electricity for the future involves small power plants and cogeneration. Until recently, the electric industry achieved economies of scale by building large plants. But huge capital and financing costs have discouraged large scale projects.

A significant amount of electricity, however, is available from cogeneration and small power facilities. Boston Edison, for instance, requested bids for 200 MW of this power last year and received offers to provide over 1800 MW—the equivalent of Seabrook and Pilgrim capacity combined. If utility bidding processes and other development programs currently under way achieve their targets, we will have over 2000 MW of new cogeneration and small power in place by 1995.

Most cogeneration and small power facilities can be built in just a few years. Once built, they offer more reliability than larger plants. When one small power plant goes down for planned or unplanned maintenance, it doesn't jeopardize the entire electrical grid. When a large nuclear plant goes down, however, it can throw the entire system out of kilter.

Last summer, for instance, almost 25 percent of Massachusetts gener-

ating capacity was out of service, which led to a tight supply situation. This occurred because five out of eight large nuclear plants in New England were down for scheduled and unscheduled repairs. While improving the scheduling of maintenance work at these nuclear plants would help, having a large number of non-nuclear, small power plants would especially improve system reliability. Even if a few of these small power plants needed maintenance, large numbers of other plants would still be operating, so that the overall impact to the system would be minimal.

I will soon be filing legislation that would encourage the construction of more cogeneration and small power facilities. Massachusetts is currently one of only three states that specifically prohibits cogenerators and small power producers from selling power directly to electricity consumers. My bill would allow cogenerators and small power producers to sell their excess electricity to no more than two other customers. I hope this legislation would encourage more cogeneration and small power facilities so that in combination with new energy efficiency savings, we will have ample power for the next decade.

All of us are concerned about making sure that our booming economy continues to have the energy it needs. Some advocates for Seabrook and Pilgrim have tried to exploit the situation by suggesting that the start-up of these two nuclear power plants is the only way we can meet our future energy needs. But that course of action is not our only option.

There is a better course we can follow. We can meet our energy needs with an active program of energy efficiency and the development of new cogeneration and small power facilities. The Federal Reserve Bank report itself recognizes that "the most readily accessible source of power for the next several years are small independent power generating projects and expanded conservation efforts."

We are at a true turning point here in Massachusetts. Through bold action we can use energy efficiency measures, the development of small power facilities, and cogeneration to fuel our Commonwealth's economic growth.

In doing so, we can avoid being forced to choose between unsafe power and insufficient power, and insure a booming economy with a safe, reliable supply of energy for the years ahead.

BERNICE K. MCINTYRE
Chair, Department of Public Utilities

Bernice K. McIntyre was appointed chairman of the Massachusetts Department of Public Utilities by Governor Michael S. Dukakis in September 1987. Ms. McIntyre previously served as commissioner of the Department of Public Utilities for four years, as assistant secretary and general counsel for the Executive Office of Environmental Affairs, and as general counsel to the Massachusetts Coastal Zone Management Office. She is a member of the Executive Committee and Water Committee of the National Association of Regulatory Utility Commissioners. Ms. McIntyre is a graduate of Oberlin College and Boston University Law School.

As represented by the speakers at this symposium, there are many players affecting the state's energy decisions and each has a role to play in the ongoing effort to ensure an adequate supply of safe, reliable energy at the least possible cost. As I see it, the role of the Department of Public Utilities in this ongoing effort is twofold:

- To set clear regulatory standards for rates and services which utilities, consumer groups, and the public can understand and which create a level playing field that enables all potential providers of energy resources, including conservation providers, to compete fairly.
- To work with others toward modifications to the NEPOOL pricing structure so that it will afford economic incentives to individual utilities for their operation.

I will briefly highlight the Department's actions in each of these areas. First, the Department has moved, through two major orders, to provide clear ratemaking standards to accommodate the expanding market of energy providers. These standards not only allow a utility to consider all possible energy sources, but require them to do so.

In 1986, the DPU established a bidding process for obtaining power from cogenerators and small power producers which has become a national model.

In May of this year, the Department promulgated regulations establishing a pre-approval contract approach to the contraction of new plant or major modifications to existing plant. Under this new policy, now in effect, utilities are assured of the ratemaking treatment the new project will receive *before* they have built it, and consumers are protected from bearing the costs of construction overruns and plants failing to produce electricity. The regulations also stipulate that the utility must demonstrate—to the Department's satisfaction—that the proposed construction is the least-cost alternative for meeting the utility's anticipated electricity demand. The combined impact of these actions has been to create clear regulatory guidelines which should allow utilities to maximize all of their options to meet the state's energy needs.

The department, in pre-approving a fixed price for the recovery of costs of the new generation, protects the ratepayers from the risk that the plant, or a significant plant addition, runs over budget while allowing the utility to earn a significantly higher return if it brings the plant on line under budget. This gives the utility every incentive to build a plant in the most cost effective manner possible.

This new ratemaking approach for utility built generation parallels to a great extent the process by which the Department presently reviews purchase power contracts and qualifying facility proposals. The regulations encourage the utilities, when proposing new plants, to use a bidding system to demonstrate that the proposed new plant is the least cost alternative. The measuring rod for cost effectiveness includes the review of the economics of alternatives such as conservation and qualifying facilities. These regulations mark significant progress toward a level playing field among all supply sources and demand side management measures.

The department has set an overall policy that utilities include conservation and load management (C&LM) options in energy planning. Where necessary, we have taken further steps to require utilities to make the optimum use of these demand management alternatives.

In 1983, the DPU set out its standards for cost recovery for conservation stating that C&LM measures must result in the lowest possible total cost of service in meeting customers' electrical needs, that they be designed

to save electricity rather than subsidize the saving of oil and natural gas, and that cost recovery for C&LM investments be based on the energy or capacity saved. That standard was further refined in 1986 when the department, in a Boston Edison rate order, stated that utilities would be allowed to rate base conservation measures.

To back up its policy, and to ensure that C&LM options were receiving full consideration, the department has—within the context of individual rate cases—ordered companies to take specific C&LM action. Most recently, the department found the C&LM program of Cambridge Electric Light Company to be inadequate and ordered the company to report on its action plan for implementing C&LM measures within 120 days. The company was also ordered to take steps within 90 days to develop cost-effective C&LM programs targeted to low income residential customers. Other companies, including Boston Edison and Western Massachusetts Electric, have also received specific orders to improve and enhance their C&LM programs.

In addition, the department has opened a proceeding for the discussion of the best ratemaking treatment for C&LM measures to ensure their optimum utilization. Hearings into this matter have elicited several exciting proposals. We are pleased that the process is generating serious consideration of this important topic.

This year, the Department has also gathered information from each electric utility company describing their existing C&LM programs. This data will be reviewed and shared to provide a resource for companies seeking information about programs already tested in other areas of the state.

Finally, the Department has for some time believed that the NEPOOL pricing structure is providing economic disincentives to its member utilities for operation and maintenance of their generation. The Department continues to work with NEPOOL and others to resolve this issue.

Several years ago, the Department took the lead working with NEPOOL and petitioning at FERC for amendments in the NEPOOL agreement. These changes were intended to improve the maintenance and operation of utility generation in the region. The Department joined with the other states in New England and NEPOOL in requesting that the performance incentive program amendments to the NEPOOL agreement be adopted. The FERC subsequently ruled in favor of Massachusetts, the other states, and NEPOOL

in allowing these modifications. However, future improvements to agreements must be obtained to ensure optimum utility operation.

NEPOOL determines, on a regional basis, the economic dispatch of capacity; it also imposes capacity deficiency charges on utilities and sets prices for energy sales and other financial incentives. The present NEPOOL price structure provides less than optimal incentives for the best utility performance.

The Department is working with the New England Governors' Conference, the New England Conference of Public Utility Commissioners, and NEPOOL, as well as other interested parties, to have sufficient capacity *available* to meet load and operating reserve at any given time and to ensure that the maximum price for capacity under the NEPOOL agreement ensures adequate reliable supplies. Massachusetts is urging a more market oriented approach on the part of NEPOOL for exchanging energy and capacity.

It is the Department's intention to work through the NEGC, NECPUC, and with NEPOOL to cooperatively make the necessary changes to the NEPOOL agreement to ensure that both the Commonwealth and the region have reliable energy at the least cost possible. We will turn to FERC only if such efforts fail.

In conclusion, I look forward to working toward the achievement of the department's goals as we continue to develop regulatory policies which are balanced and fair and which will ensure reliable energy at the lowest cost for today and beyond.

SAMUEL HUNTINGTON
President and Chief Executive Officer
New England Electric System

Samuel Huntington became president and chief executive officer of the New England Electric System in 1984. He joined the Electric System in 1976, serving as assistant general counsel, general counsel, vice president, and chief financial officer. Previously, Mr. Huntington was associate professor at the Boston University School of Law, and assistant to the solicitor general at the U.S. Department of Justice. He is a member of the board of directors of the Edison Electric Institute, Renewable Energy Institute, Living Lakes Inc., and the Environmental and Energy Study Institute, among others. Mr. Huntington is a graduate of Harvard College, Columbia University School of Law, and the Stanford University Executive Program.

I am in full agreement with Dick Kopcke that we must aggressively pursue a broad array of supply and demand programs if we are to meet the future needs of New England consumers for reliable, low-cost energy. New England utilities are moving ahead aggressively on a number of fronts; without attempting to speak for other utilities, I will describe my own company's approach and progress.

But the utilities can not act alone; we need a broad awareness of the energy situation and participation by all interested groups in working out solutions. After all, we all have a vital stake in the continued strong performance of the New England economy. And the economy can not go far without adequate supplies of energy.

Dick Kopcke and his colleagues deserve a good deal of credit for raising the level of discussion of these issues to a more informed status. And I congratulate Evelyn Murphy for digging into these issues, understanding them, and searching for solutions. This symposium is a good example of her efforts to get the interested stakeholders to work together.

My own perspective on the outlook for electricity is that we face a real crunch over the next couple of years and the need for aggressive pursuit of

additional resources throughout the 1990s.

The current crunch is caused by the strong economy and resulting strong kilowatthour sales. NEPOOL's kilowatthour sales are up 5.4 percent so far this year, and have increased 4.6 percent per year over the last five years. Peak demand has also gone up sharply, with strong peaks last summer and last winter, and a new summer peak just last week.

We have used up the cushion we enjoyed only a few years ago. We are relying more on external purchases from outside New England. As we look ahead over the next two years, we could well see occasional voltage reductions and possible customer appeals. So far, we have avoided customer interruptions and we certainly are working as hard as we can to avoid interruptions in the future.

RESPONSE OF UTILITIES

What are the utilities doing, particularly since the need for action was highlighted in the Governors' report in December 1986? I answer that question by listing what my company has done. Other companies have taken similar actions.

Over the last two years, we have:

- Ramped up our conservation and load management programs to system-wide, full scale implementation. We have a target of 230 megawatts (MW) of savings by 1991, with 30 percent of that target achieved to date. We may well be increasing this target shortly.
- We participated in the reactivation of Northeast Utilities' retired units, as called for by the Governors' report.
- We continue to aggressively pursue alternate energy purchases. We have 250 MW of such purchases in service and another 420 MW under contract.
- We recently issued a request for proposals for an additional 200 MW of capacity with responses due next month.
- We are working hard on our plant life extension programs and have mounted a major effort to improve the performance of our existing thermal units. In this regard, NEPOOL has implemented a significant reform improving the incentives to utilities for good plant performance.
- We undertook a comprehensive site study and technology re-

view and recently announced plans for 300 MW of additional capacity in Providence. We are participants in Ocean State Unit 1 and just last week signed up for 1654 MW out of Unit 2.

- In the transmission area, we and Public Service Company of New Hampshire added an important new transmission line between New Hampshire and Northeast Massachusetts which was energized last week.

OUTLOOK FOR THE FUTURE

So much for the immediate outlook and current efforts. What is the outlook for the longer term? Again, I will refer to our own plans. We are 20 percent of New England and fairly representative of the pool as a whole.

The biggest uncertainty we all face is load growth. Our base case projections estimate load growth of about 2 percent per year. But our prior forecasting track record is not very good and therefore, we are concentrating on identifying the plausible scenarios that might occur. These scenarios present a broad range of capacity needs by the end of our planning period. The challenge we face is to adopt sufficiently flexible plans so that we can meet the future needs of our customers at the lowest possible cost.

Our least cost resource plan is designed to cover the high growth case in the initial years, but has enough flexibility in it so that we can adjust it as

TABLE 1

CURRENT PLANS

• Currently committed projects	
C&LM - existing programs	230 MW by 1991
Alternate energy	420 MW signed contracts
Purchased Power	
Ocean State 1&2	225 MW
Hydro Quebec 2	215 MW
Seabrook	115 MW
Life extension - fossil plants	
• New projects under consideration	
C&LM - additional	50 MW/yr beginning in 1992
Alternate energy/purchased power	
Solicitation in 1988	200 MW
New generation	310 MW combined cycle 1995/96
	360 MW plant in 2005/06

circumstances develop. Of the resources that make up this plan, demand-side programs account for 1,000 MW or about 30 percent of our incremental resource needs.

The specific programs are shown in Table 1. The conclusions we draw from our planning is the same conclusion Dick Kopcke draws for all of New England: we need to aggressively pursue a broad array of programs.

I do not think anything I have presented so far should be too controversial. But I will refer briefly to a couple of issues which are indeed controversial. They are illustrated in Table 2 and can have a significant impact on the near-term outlook.

First, Seabrook—an 1,150 MW plant, fully constructed with high marks from the NRC. Clearly, operation of Seabrook would provide substantial relief from the current capacity crunch. The battle lines on Seabrook are firmly drawn. From my side of those lines, I firmly believe the plant can be operated safely without endangering the health and welfare of its neighbors. I ask only that those of you not committed to one camp or the other examine the facts and make up your own minds.

The second issue is one on which I hope most of us can agree. That is the referendum which, if approved by Massachusetts' voters next fall, would require the immediate shutdown of the Pilgrim and Yankee Rowe nuclear plants. Approval of this initiative would be bad public policy and would

TABLE 2

THREATS TO NEW ENGLAND CAPACITY

No Seabrook	1150 MW
Lose Referendum	
Pilgrim	667 MW
Yankee Rowe	173 MW
Total Impact	1990 MW

or 7.5% of projected capacity

truly cripple the New England economy if extended to other New England states. Imagine the message we would be sending businesses considering locating or expanding in New England if—at a time when capacity is tight—we turn our backs on operating plants. Enough said.

CONCLUSIONS

- We face tight supplies in the immediate future and could see this picture extend into the 1990s if strong load growth continues.
- We need to explore all options on both the supply-side and the demand-side.
- We should not turn our backs on available nuclear resources in Massachusetts or elsewhere.
- It is of vital importance that we all engage in a robust dialogue on the key policy choices we must make to assure adequate supplies of electricity for a thriving New England economy.

The Federal Reserve Report and this symposium are important steps in furthering that dialogue.

DOUGLAS I. FOY
Executive Director
Conservation Law Foundation

Douglas I. Foy became executive director of the Conservation Law Foundation in 1977. He previously served as staff attorney with the Foundation, and was an attorney with Hill & Barlow, Boston, Massachusetts. Mr. Foy has lectured at the Boston University School of Law, Harvard Law School, Harvard University, Marine Biological Laboratory, Massachusetts Institute of Technology, and the Yale School of Forestry and Environmental Studies. He has served on the board of directors of the Appalachian Mountain Club, Center for Energy Policy, and Center for Negotiation of Public Policy, among others. Mr. Foy is a graduate of Princeton University, Cambridge University, and Harvard Law School.

Above our heads, in this conference room, you can count 80 lights in cans. Three of them are burned out. Can you imagine how hard it is going to be to fix the ones that are out? If this room is used regularly, those lights probably burn out every few months and probably cost $10 to replace, just for labor alone.

There is, by my count, 12 kilowatts of electric lighting in this room. Unfortunately, these lights and similar lighting systems all over this city, are gas guzzlers. If we replaced these lights with modern lighting technologies, we would cut their energy use by 70 percent, and they will pay back their cost in energy savings alone in two years of electrical savings. Two years. Any businessman would know that to be a good return. And after that, they will last much longer. They will last ten times as long as the lights in this conference room, thus saving maintenance costs as well.

What we need to focus on is how to make our electricity systems more efficient, so that when Sam Huntington needs to build new power plants those power plants can be justified as a necessity and the next cheapest option. The only way to make that option acceptable to the public—a public that is pushing referendum votes to close down plants, that is fighting every

plant ever proposed—is to prove to the public that we have the most efficient electricity system possible.

About a year ago, my organization and a number of other environmental and consumer groups all over New England published a study called *Power to Spare—A Program to Improve New England's Competitiveness Through Energy Efficiency*. As Larry Alexander has said, we're not talking about freezing in the dark here. We're talking about competitive, cost-effective, high-tech programs that make us more efficient. These are programs that improve the relative economic performance of this region with respect to all other regions in the country.

I will review a few numbers. Figure 1 describes New England's energy use at the moment. Note that about two thirds of all the electricity in this region goes to lighting, motors, and heating and air conditioning. Two thirds.

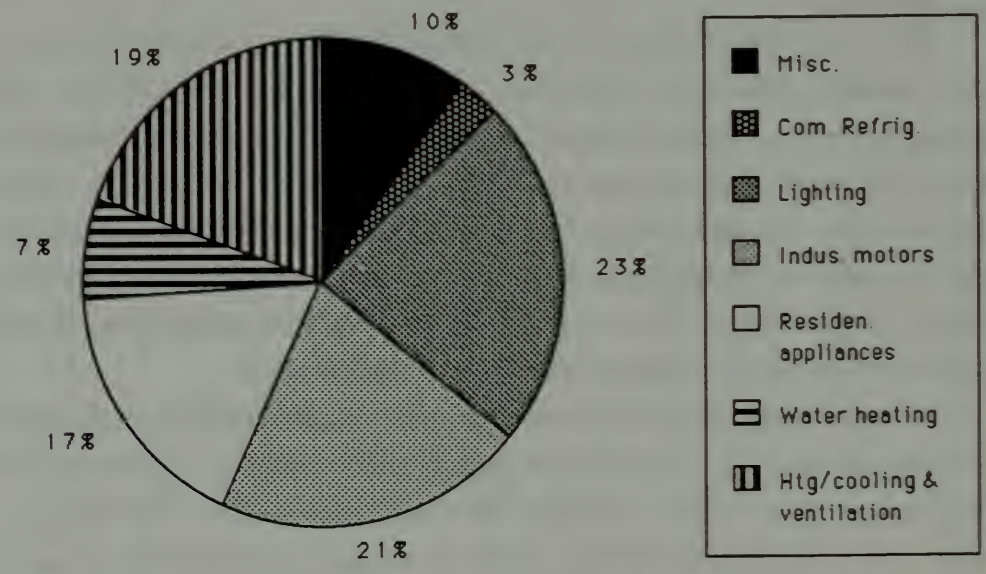
Breaking down electricity use by company, at Boston Edison, for example, 75 percent of all electricity goes to industrial and commercial uses, 60 percent to buildings like the Federal Reserve.

To break down Edison's commercial sector one step further, lighting accounts for 45 percent of Edison's commercial sales. *Forty-five percent!* We can cut electricity use by 70 percent in these lights. By the way, fully half of all the air conditioning load in a commercial office building on a

---

HOW NEW ENGLAND USES ELECTRICITY

FIGURE 1



Percentage of annual average conumption by end use. Source: New England utilities; Electric Power Research Institute; New Engalnd Energy Policy Council.

warm summer day goes to cool the lights. The same lights I have identified as 70 percent inefficient!

Utilizing present-day, off-the-shelf technology—equipment sold by Panasonic, GE, Sylvania, and Westinghouse—commercial lighting consumption can be cut by 70 percent, residential space heating by 40 percent, and industrial motors by 20 percent. The new, high-efficiency lights are essentially a fluorescent light that screws into a normal incandescent socket. This is a 7-watt light which generates 60 watts of usable electric light. So it essentially replaces a 60 watt light bulb, but uses nearly 90% less electricity. New fluorescent lights have an electronic ballast, very high frequency, so they do not flicker. They have a very clear color rendition. You can get lights in various color renditions so you do not have all the objections people used to have regarding the fluorescents. The problem is that they are hard to find right now because none of the people that are building buildings are using them. And so the market hasn't broken open. Why aren't people using these? That is the question I really want to focus on.

If we want to produce a kilowatt hour of electricity through conservation—new lighting systems, for example—it will cost something on the order of $.03 per kilowatt hour or less. If we want to generate it from a power plant, it is anywhere from $.06 per kilowatt hour and up. Seabrook is on the order of $.20. Clearly, the efficiency improvements have a cost advantage of about two to one, often much more than that. So, they are a very good bargain.

Turning now to Dick Kopcke's refrigerator, the problem is that Dick will not buy the efficient refrigerator. If Dick won't buy the refrigerator, Sam Huntington should buy it for him. Sam buys Dick a new, efficient refrigerator and Sam generates electricity at under $.03 per kilowatt hour. It's the cheapest power plant Sam can buy. It is cheaper than gas turbines, and it is cheaper than coal fired plants.

Why doesn't the Federal Bank put new lights in their conference room? Well, I don't know. Maybe they don't have energy efficiency experts on their staff. Maybe Dick hasn't pumped them hard enough yet. If the Bank will not replace their inefficient lights, Sam should. Sam should install the lights because they are the cheapest power plant Sam can get his hands on. Having made that investment, Sam's company should be able to get a full return on it. Sam should be able to treat the investment as if it were a conservation power plant. He should be able to rate base it and indeed,

because the social and environmental benefits are so dramatic, Sam might want to argue that he be given a premium return on that investment. In essence, by buying Dick a refrigerator or the Bank new lights, Sam is buying a power plant. It is not conservation with sweaters and freezing in the dark. It is a power plant.

A supermarket was built recently in the Pacific Northwest (the Pacific Northwest is beating New England's pants off on energy efficiency right now). The Bonneville Power Administration went to this supermarket and said:

> *You're going to build the supermarket to meet building code and it will consume X amount of energy. We will pay you the difference in incremental cost to build it to a higher energy standard than code requires. We want to beat code and we will make it free to you. We will pay the differential cost to make it better.*

This building was built better: better lights, better freezing equipment, better air conditioning and heating. It uses 32 percent less energy than the code constructed building would have used. *The energy savings paid for the cost of the measures in 1.6 years.*

The next time you walk into a supermarket, find out where they vent the heat from the refrigeration equipment. Not surprisingly, it goes to one of two places: outside or inside. Unfortunately, it goes outside or inside 100% of the time; it will not go outside sometimes and inside other times. A refrigerator throws off a tremendous amount of heat. In winter that heat could be used to heat the building. In return, you can downsize or eliminate the furnace, saving a tremendous amount of energy. In the summer, when the heat is not needed and would instead load the air-conditioning system, it should be vented outside. Not a very complicated concept. Yet, I defy you to find a supermarket in New England that is built that way.

Again, to summarize, the Bonneville Power Authority, a power company, went to this builder and said, "We want to help you build your building better because it's the cheapest source of electricity we can get our hands on," paid the cost to do it better and saved 32 percent of the energy that would otherwise have been used by this building. That is smart economics. That is what we should be doing in New England.

What we are presently doing is illustrated in Figure 2. At the moment, this is what is being spent by the three major companies in New England on

conservation programs vs. what they spend on traditional generation. Connecticut Light and Power spends $260 million a year on generation and transmission; they spend slightly less than $15 million on conservation and efficiency. The other companies, Central Maine Power and New England Electric, are comparable.

Clearly, there is a disproportionate share of investment by the utilities going to generation and transmission, and a much smaller share going to efficiency options. There is very little *direct* utility investment in conservation—very little of these kinds of programs where the company goes out, does the work, and then rate bases it.

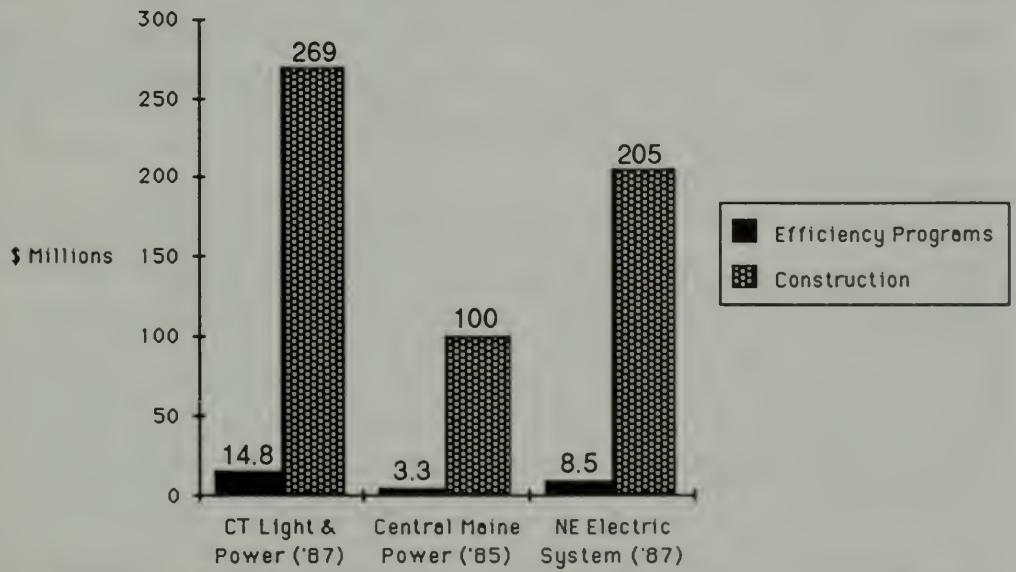
In conclusion, I present nine reasons for pursuing direct utility investment in conservation:

1. It is not conservation, it is efficiency. It is not the old days of sweaters, it is the new days of high-tech. Efficient enterprise makes good business sense. It is a better mouse trap.

2. It improves our region's competitiveness. It will cut the cost of products and it will improve New England's competitiveness with respect to the rest of the country. If we build a better efficiency mouse trap up here we will cut our electricity costs disproportionately with respect to the rest of the nation.

THE EFFICIENCY SPENDING GAP

FIGURE 2



Expenditures in $ millions of three major New England utilities on construction and electrical efficiency improvements.
Sources: Northeast Utilities; Central Maine Power; NEES; Moody's 1986 Public Utility Manual, Investor Responsibility Research Center.

3. It frees capital that would otherwise be spent on less efficient, less economic options such as new power plants that are not needed.

4. It frees utilities to become energy service industries, relieving them of the burdens of vast, capital-intensive generation projects with high risks.

5. Efficiency can be pursued incrementally, on an "as needed" basis —unlike power plants that must be built in huge chunks. Remember Sam's predicted growth charts? Nobody really knows where on those charts we are going. If we build power plants to meet murky demand forecasts, and we project demand incorrectly, those power plants may be stranded capital. A wasted investment. They may not be necessary when we get 10 years out and find that demand failed to follow the chart. Efficiency measures, on the other hand, can be installed building by building, block by block, city by city, so one year you can do a little bit; the next year, if growth is bigger than you thought, you can do a lot. You can scale it, tune it and adjust it to match growth as we find out where growth is actually going. Incrementally, it is fabulous.

6. Efficiency is fast. We can fix this conference room tomorrow. Get energy right out of it, tomorrow.

7. By pursuing efficiency investments aggressively it will smooth the approval process for needed generation. This is a particularly important point. The reason people fight power plants so hard right now is, in part, they do not believe the utilities are doing the best job they can to limit the need for new plants. If efficiency is truly tapped out, I believe you will find that the environmental and consumer groups are much more receptive to generation options. All kinds of new allies could be developed for generation if efficiency programs are really pushed hard.

8. Efficiency is cheap.

9. Finally, efficiency responds to Evelyn Murphy's challenge to all of us—to move toward a rational energy plan. It will allow a cooperative effort between the users, utilities, and the consumer and environmental groups to really minimize the need for new construction. Sure, you are going to build new power plants. But let's make sure they are ones we absolutely need, that they are the cheapest we can get, and that we have done all other cheaper measures first. Once there, we will have created a rational energy future for New England and for this state. I look forward to working on that issue with all of you.

GEORGE W. SARNEY
Senior Vice President
and Group Executive
Raytheon Company

George W. Sarney was elected senior vice president of Raytheon Company and group executive of the Industry Services Group in 1986. He was previously with General Electric Company for twenty-five years where he served as vice president and general manager of the Turbine Marketing & Projects Division, vice president and general manager of the Gas Turbine Division, and general manager of the Meter Business Department, and the Mechanical Drive Turbine Department. Mr. Sarney is a graduate of the University of Buffalo, and earned his master's degree and Ph.D. from the Polytechnic Institute of Brooklyn.

I applaud the lieutenant governor and the McCormack Institute for sponsoring this program. We think this symposium is a very constructive step and we appreciate the opportunity to present the view of a large user of electricity.

Our company is one of the state's largest industrial employers, with over 31,000 people in Massachusetts. We believe that an adequate, reliable and affordable supply of energy is fundamental to our area's continued economic prosperity. It is this interest and, frankly, this concern which prompted us some time ago to try to better understand the energy issue and how we could work together to address it.

Tom Phillips, Raytheon's chairman and CEO, laid the groundwork for our efforts in a speech to the Metrowest Chamber in April of 1987. He said that the whole discussion of our energy situation must get beyond the nuclear issue and that we should not take our recent good times for granted. He also said that, "We've just got to disabuse the public—and maybe even ourselves—that only the utilities have something at stake in how this all turns out."

What we have learned, seen, and heard over the past year has hardly been reassuring. We are concerned that there has been too little action and

too much rhetoric reflecting hardened public positions from the past. We are concerned that while New England's economy has been booming, our energy infrastructure has been deteriorating. As users, we feel more vulnerable than ever.

Our awareness has certainly been heightened by power grid demands that have leapfrogged from one record season to another. In fact, the region's January 14 record load exceeded levels originally projected for 1992. And this month, we have already set a summer record—with the whole season still to get through.

We feel particularly vulnerable because of our imports of electricity and oil from outside the region. Ten years ago, we in New England generated enough power to meet our own needs. Since then, our economy has grown dramatically, but we have not added capacity to support this growth. In fact, by 1986 New England was importing 10 percent of its power from outside the region—Massachusetts almost 19 percent from outside the state.

The situation with regard to imported oil is hardly more promising. Since the OPEC shock, the U.S. as a whole has reduced to only 6 percent its dependence on oil to produce power. We in New England are above 40 percent; above 60 percent in Massachusetts, and essentially all of the region's oil is imported.

Today we are enjoying low oil prices and reduced rates for electricity. But, we have left ourselves vulnerable to serious price swings or even curtailment tomorrow. How do we reduce our vulnerability? How do we regain control of our destiny? And how do we make up for lost time? We agree that conservation has got to play a big role—both in terms of today's problems and our long range competitiveness. We applaud recent steps taken by some of our electric utilities to offer incentives for investment in conservation and load management. Conservation has been a priority at Raytheon for some time. In the decade since the adoption of the National Energy Act, we have taken actions that have made us about 30 percent more energy efficient. That is for all kinds of energy and on a company-wide basis. We have installed energy management systems and efficient lighting; we have invested in more efficient air-conditioning and heating; and we are going to do more in response to new utility incentives.

We are going to focus on the individual role of our employees—to raise their level of awareness. We have already taken the first step by highlight-

ing energy in our company newspaper distributed to all 76,000 employees.

We believe conservation is good business. That it is a win-win situation, much like the relationship between quality and productivity. But we also believe that you can only get so much out of conservation, particularly in a growth environment.

Raytheon, for instance, has been fortunate enough to grow significantly in the last decade so that even with conservation, we are still using more energy now than before—particularly electricity—as we have converted older facilities to advanced high-tech production.

We have experienced the benefits and the limits of conservation. So, on the demand side, we need to consider the full range of options. Conservation has its place. But we must pursue every other option as well—including peak-load pricing and more interruptible load contracts—because demand-side management can help right now.

We will need to play "catch-up" on the supply side as well. Here, our recommendations for action reflect a business-like approach that admittedly does not deal with all the issues many of you have to consider. But we think it does point in the right direction.

The key is for all stakeholders to work together as a team. Given this commitment, we must recognize that our fundamental supply problem is the long lead time required to get anything done. I'm thinking of permitting cycles and bureaucratic cycles, as well as engineering construction cycles. At the same time, we need to be able to deal with sharp changes in demand—changes that we may not be able to accurately forecast.

How should we respond? First, we need to reduce the time-cycle required to bring additional supply on line so that we are more in synch with how long it takes the rest of the country. Right now in New England, it takes about 5 years to bring a simple power plant on-line, and 10 years for a coal plant. Working together, we can cut the cycle in half. Second, we need to admit that there are always going to be uncertainties, particularly with regard to future rates of power demand and the price of fuel.

We need to manage this uncertainty by building a tolerance, a diversity, and a surplus into our supply plan. If we could plan on a surplus of at least one or two years' growth, we would have a 5 percent or 10 percent margin to support our economic growth. That is not a lot; it is a reasonable reserve. But it would provide negotiating leverage and would enable us to avert a situation where, out of desperation, we could be forced to pay any price for

electricity during a shortage.

Diversity of supply also means withdrawing from our heavy reliance on imported oil and turning instead to coal, and even gas. I say this knowing full well that these alternatives may be more costly in the short run. Cogeneration is the supply-side approach that has received the most publicity or, more recently, independent power projects.

But, we are going to have to cut permitting cycles here, too, if we want to turn forecasts into reality. And we should not ignore our other supply options. For instance, there is enormous potential locked in our existing plants. Why not repower this aging fleet with new technology for higher efficiency and reduced environmental impact?

In summary, let us cut in half the time cycle for new capacity, let us give ourselves a one or two-year lead-time surplus, and let us commit to diversity in fuel supply.

In other words, on the supply side—and on the demand side—we need to pursue a multifaceted energy strategy to sustain New England's growth. All of us in this room need to work together on this problem. We need to identify the consensus where it exists, to keep our minds open where it does not, and to recognize legitimate concerns and search for ways to succeed.

We may not have a lot of *natural resources* to help us solve our energy problem. But no region is richer in *human resources*. Now is the time to apply them.

MARY BETH GENTLEMAN
Assistant Secretary for Policy
Office of Energy Resources

Mary Beth Gentleman has served as the assistant secretary for policy in the Executive Office of Energy Resources for the past six years. Ms. Gentleman has many years experience in the field of energy and environmental policy; first, as senior planner with the Massachusetts Energy Facilities Siting Council, then as an energy and environmental policy analyst for Lt. Governor Tom O'Neill. She holds a master's degree in business administration from the School of Management at UMASS-Amherst and a law degree from Suffolk University.

We have heard a great deal about a gap between electricity supply and demand, and a variety of suggestions for filling that gap. I would like to focus on a corollary gap—what I call the "Action Gap." I will first define it, explain its causes, and describe remedies underway by state government. I then conclude with two suggestions for action by the business community which I believe would be helpful in the short—and long-run.

THE ACTION GAP

I define the action gap as the difference between the level of activity by our utilities to generate customer concern about the supply situation versus the level of effort by them to save real megawatts or to bring real megawatts on-line. In this country, the First Amendment provides wide latitude for generating customer concern. But the utilities' obligation to serve should be stimulating at least an equivalent level of action to develop real megawatts to meet customers' needs.

What evidence do we have of an Action Gap? Please consider the following questions:

- Why has one Massachusetts utility signed contracts for only 93 megawatts (MW) of power from cogenerators and small power producers when over a year ago the utility asked for 200 MW

of proposals and received 1847 MW of bids?

- Why have several Massachusetts utilities not yet issued RFPs for similar power projects almost two years after having been ordered to do so?
- Why did power-short Massachusetts utilities stand by, actionless, while a Connecticut utility prematurely retired 240 MW of generating units in 1986 which Connecticut did not need?
- Why has it taken until this summer to bring all of those units back into service?
- Why did one New Hampshire utility pay $1.25 million to four developers to cease development of 96 MW of wood-fired power plants?
- Why do the members of NEPOOL allow generating units to keep their capacity credit for up to two years even if a plant, such as Pilgrim, contributes nothing to the grid?
- Why is it that the nuclear plant in Midland, Michigan is today being converted to a 1300 megawatt gas-fired unit while Seabrook's owners refuse to seriously study that option?

These are but a few examples of the Action Gap. Apparently, there is a broad consensus that an Action Gap exists. A survey by the Greater Boston Chamber of Commerce released last week asked business executives whether they could agree with the statement, "Utilities are doing all they can to reduce energy shortages." Only a third said yes. Two-thirds could not agree. Two-thirds of the executives surveyed correctly perceive the need for more utility action than has occurred.

The next obvious question is why does such an Action Gap exist? I think there are three main reasons:

First, NEPOOL's rules and practices allow power-short utilities to be overly dependent on NEPOOL capacity reserves and emergency procedures. A recent study of NEPOOL's rules conducted by Booz Allen for the State of Connecticut outlines in detail how NEPOOL's rules could be changed to require each utility to bear its own fair burden. For example, the study recommends that NEPOOL end the practice of waiving deficiency charge penalties against power-short utilities. How effective can a deficiency charge be if it is frequently waived?

The second cause of the Action Gap is what one could call the "Orphan Annie approach to planning." Despite public pronouncements to the con-

trary, utility planners have had a consistently optimistic perspective on issues such as minimal load growth, the restart date of Pilgrim, and the level of unexpected outages on peak demand days. Utility planners have consistently assumed, as did Orphan Annie, that the sun will come out tomorrow. Sometimes it does, sometimes it does not. However, utility planning must take into account reasonable negative contingencies—we must have adequate supplies regardless of whether the sun comes out.

The third reason for the Action Gap is our utilities' very rational desire to protect the value of assets—particularly Millstone III, Seabrook, and Pilgrim. By that I mean, utilities have unquestionably delayed securing new power sources to avoid the possibility of having government conclude that those three plants, or portions thereof, are not needed. Such a determination could mean less than full recovery of costs for the utilities.

The issue of Millstone's usefulness has been resolved; three-fourths was allowed in ratebase. Seabrook's usefulness is also being resolved, albeit slowly, at FERC. Pilgrim is currently in ratebase but its future is a question mark.

In summary, the Action Gap is fostered by flaws in NEPOOL's rules, an overly- optimistic approach to planning, and the rational urge to protect the value of assets pending ratebase decisions.

CLOSING THE GAP

The public interest is best served by stockholders, consumers, utility executives, and government working together to close the Action Gap. Approaches for resolving each of the three factors mentioned above are either already in place or are under consideration. I will describe each briefly.

First, to avoid the protection of assets problems in the future, the Energy Office has advocated that the Department of Public Utilities pre-approve power plant construction costs. This would end the *post hoc* review problem and would remove the disincentive to develop other needed resources. In a recent interim order, the Department proposed new rules for power plant cost recovery based on the pre-approval concept. While the issue is not yet fully resolved, pre-approval is guaranteed to be an aspect of the final rule.

Second, to address the Orphan Annie approach to planning, the Energy Office, along with the Attorney General, the Conservation Law Foundation,

and others have proposed that Massachusetts adopt a uniform planning process called least-cost integrated planning. Recently, the Energy Office filed a proposed set of regulations with the Department of Public Utilities to implement such a planning process. In a nutshell, each utility would file a single plan with the DPU and the Energy Facilities Siting Council every two years, setting forth a demand forecast and resource plan. Broad public participation would be encouraged in the review of the plan. After review and hearings, the two agencies would render a decision on the plan. Once approved, the utility could proceed to implement the plan with a high degree of assurance of cost recovery.

Our objectives for suggesting a new planning process include a desire to create a mechanism for generating a consensus for utilities' resource plans and creating an open forum to ensure that utilities are planning for reasonable contingencies.

Third, regarding NEPOOL's rules, the New England Governors have a task force devoted exclusively to negotiating with our utilities to update NEPOOL's rules. This is in addition to efforts initiated by the New England Conference of Public Utility Commissioners to negotiate changes in maintenance practices and penalties of NEPOOL. More change is in order, but the avenues are in place to move forward to minimize NEPOOL's disincentives to adequate supply.

SUGGESTIONS FOR ACTION BY THE BUSINESS COMMUNITY

I conclude with two suggestions for ways the business community can help advance its own interest in having an adequate supply of affordable energy.

First, you can be instrumental in helping state government license new energy facilities which may soon be proposed near your home or place of business. To the extent we do not meet new demand through efficiency investments, new facilities will be needed. They may include overhead transmission lines, gas pipelines, and/or new gas- or coal-fired generating stations owned by developers or utilities.

As community leaders, you can play a key role in the siting process by finding out the facts about a project, its benefits and costs, and helping others to realize the public benefits which environmentally-sound facilities can confer. We need you as a partner in the siting process to insure that necessary facilities will be built in a timely manner.

My second suggestion pertains to buildings you may own or operate. One aspect of New England's and Massachusetts' supply/demand challenge is meeting an ever-increasing summer peak driven by electric air conditioning of commercial and industrial spaces. Air conditioning from those two customer classes constitutes about 20 percent of the summer peak. One action you could take is to evaluate the costs and benefits of switching to gas air conditioning.

I suggest this for two reasons. First, you may save a great deal of money depending upon your local gas rates, electric rates, and size and shape of your air conditioning load. With seasonal rates for gas driving gas prices lower in summer, and new electric rate designs driving electric prices higher at summer peak, the economics of conversion may work for you.

On a broader level, the region has a large surplus of gas in the summer. All gas consumers would benefit financially from increasing the capacity factor or use of our gas systems via increased use of gas in the summer. In addition, if we could eliminate a few hundred megawatts or more of peak electric consumption driven by electric air conditioning, the region would benefit by avoiding construction of new peaking capacity. Moreover, to the extent that we could significantly reduce summer peak demand, New England would have less of a "dual peak" problem. Utilities have said repeatedly that maintenance scheduling is more difficult in New England due to having significant peak loads in both winter and summer. By reducing summer peak, the electric utilities would achieve more flexibility in maintenance scheduling.

For these reasons, if you own or operate a facility with a large air conditioning load, I would encourage you to call your gas company and find out what the economics of conversion may be for you. You may reduce your operating costs and simultaneously advance your interest in having adequate energy supplies at a reasonable cost for the region. While conversion to gas air conditioning and supporting the siting of environmentally sound energy facilities near you will not resolve the entire issue, I believe they are useful and concrete contributions you can make toward ensuring adequate energy supplies for our growing economy.

John W. McCormack Institute of Public Affairs
University of Massachusetts at Boston
Harbor Campus
Boston, MA 02125-3393

Non-Profit Organization
U.S. Postage
PAID
Boston, MA
Permit No. 52094